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CENTRAL INTELLIGENCE AGENCY 25X1

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COUNTRY	East Germany	REPORT	[redacted]
SUBJECT	Core Preparation Method Used in Iron Foundry, VEB Giessereien Rudolf Harlass, Karl-Marx-Stadt	DATE DISTR.	1 December 1955
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The following is the method of core preparation with waterglass and carbonic acid, at VEB Giessereien Rudolf Harlass, Karl-Marx-Stadt (formerly VEB Vereinigte Chemnitzer Giessereien).

1. Materials

Quarts sand, free from clay
Waterglass (48-50 Bé) molecular volume 2.6 - 2.75 SiO_2
without water admixture.

2. Special Preparation

50 parts Species I
50 parts Species II
5 parts waterglass

3. Sand mixture

7 parts quartssand (0.1-0.3 granulation)
1 part normal filling sand 72.4%
1 part coal dust 10.4%
0.6 part waterglass 10.4%
6.8%

4. Harlass Giessereni formula I

38% 20 liters Rudelsdorfer silver sand, white
38% 20 liters Elsterwerda sand, yellow
14.4% 7.5 liters Altsand
4.8% 2.5 liters Borna dry binder
4.8% 2.5 liters coal dust

5. Mixing Time

Dry for 1 minute, with waterglass 3 minutes; 4.5 beme waterglass 48 Bé (0.83 liters contents), 3.75 liters (7.1%). Only dry sand must be used. Mix in

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(Note: Washington distribution indicated by "X"; Field distribution by "#".)

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a wing or worm-mixer. Only waterglass is to be added. Sand must not be left longer than 6 hours or a crust forms (0.03% CO_2) in the air.

6. Process of hardening

Quarts sand is hardened with waterglass

7. Chemical procedure for hardening

$Na_2SiO_3 \times H_2O + CO_2 \rightarrow Na_2CO_3 \times H_2O + SiO_2$. Silicic acid gel forms a firm skeleton and surrounds the small parts of sand. Good airing through hydrous water increases volume.

8. Setting of the molding material

100 kg. silver sand
5 kg. water-holding special binder
1 kg. asphalt binder
Dry at 200° C. (blacken)

9. Technical details

Time of the CO_2 treatment (seconds)	Gas penetrability	Shearing strength (g/cm²)	Compressive strength
Start.	150	40	110
1	170	60	110
2	170	60	120
5	170	70	140
10	170	180	260
15	175	710	2150
20	182	1580	3250

Good elimination of air is caused by the hydrous water in the special binder.
One liter of water heated to 100°C or else the material is baked.
1,675 liters steam.

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